

**Background**

TGFβ1 (transforming growth factor beta 1) is one of three closely related mammalian members of the large TGFβ superfamily that share a characteristic cystine knot structure (1 7). TGFβ1, 2 and 3 are highly pleiotropic cytokines that are proposed to act as cellular switches that regulate processes such as immune function, proliferation and epithelial-mesenchymal transition (1 4). Each TGFβ isoform has some nonredundant functions; for TGFβ1, mice with targeted deletion show defects in hematopoiesis and endothelial differentiation, and die of overwhelming inflammation (2). Human TGFβ1 cDNA encodes a 390 amino acid (aa) precursor that contains a 29 aa signal peptide and a 361 aa proprotein (8). A furinlike convertase processes the proprotein to generate an Nterminal 249 aa latency associated peptide (LAP) and a C terminal 112 aa mature TGF β1 (8, 9). Disulfidelinked homodimers of LAP and TGFβ1 remain noncovalently associated after secretion, forming the small latent TGFβ1 complex (8 10). Covalent linkage of LAP to one of three latent TGFβ binding proteins (LTBPs) creates a large latent complex that may interact with the extracellular matrix (9, 10). TGFβ is activated from latency by pathways that include actions of the protease plasmin, matrix metalloproteases, thrombospondin 1 and a subset of integrins (10). Mature human TGFβ1 shares 100% aa identity with pig, dog and cow TGFβ1, and 99% aa identity with mouse, rat and horse TGFβ1.

It demonstrates crossspecies activity (1). TGFβ1 signaling begins with highaffinity binding to a type II ser/thr kinase receptor termed TGF β RII. This receptor then phosphorylates and activates a second ser/thr kinase receptor, TGFβ RI (also called activin receptorlike kinase (ALK) 5), or alternatively, ALK-1. This complex phosphorylates and activates Smad proteins that regulate transcription (3, 11, 12). Contributions of the accessory receptors betaglycan (also known as TGFβ RIII) and endoglin, or use of Smadin dependent signaling pathways, allow for disparate actions observed in response to TGFβ in different contexts (11).

**References:**

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## Recombinant Equine TGF- $\beta$ 1 Protein DataSheet

Catalog Number: GR104014

### Description

**Source:** Chinese Hamster Ovary cell derived

Ala279 –Ser392

Accession # NP\_001075318.1

**N-terminal Sequence Analysis:** Ala279

**Predicted Molecular Mass:** 12.8 kDa (monomer)

### Specifications

**Activity** Measured by its ability to inhibit the IL-4-dependent proliferation of HT-2 mouse T cells. Tsang, M et al. (1995) 7:389. The ED50 for this effect is typically 40-200 pg/mL.

**Endotoxin Level:** <1.0 EU per 1  $\mu$ g of the protein by the LAL method.

**Purity:** >97%, by SDS-PAGE under reducing conditions and visualized by silver stain.

**Formulation:** Lyophilized from a 0.2  $\mu$ m filtered solution in Acetonitrile and TFA with BSA as a carrier protein.

### Preparation and Storage

**Reconstitution:** Purified recombinant equine TGF $\beta$ 1 is an extremely hydrophobic protein that adheres strongly to surfaces. To ensure recovery, reconstitute at 10  $\mu$ g/mL in sterile 4 mM HCl containing 1 mg/ml of human serum albumin.

**Shipping** The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

**Stability & Storage:** Use a manual defrost freezer and avoid repeated freeze thaw cycles.

- 6 months, -20 °C as provided.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70°C under sterile conditions after reconstitution.

### DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

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